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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,580	02/19/2004	Frank J. DiSanto	COPY-74-CIP	4734

45722 7590 03/27/2006

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EXAMINER

HODGES, MATTHEW P

ART UNIT	PAPER NUMBER
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2879

DATE MAILED: 03/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/782,580

Applicant(s)

DISANTO ET AL.

Examiner

Matt P. Hodges

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/19/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

Claims 1 and 11 are objected to because of the following informalities:

Regarding claim 1, claim 1 includes the recitation “a phosphor layer associated with each of said pads” however no antecedent basis for the term “pads” exists in the claim. It is assumed for the purposes of examination that the applicant intended to use the word “areas” instead of “pads”.

Regarding claim 11, claim 11 improperly depends upon itself. It is assumed for the purposes of examination that the applicant intended for claim 11 to depend upon claim 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 6-8, 10, 12, 15, 17-23, 25, 28, 29, 31, 34, and 36-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Troxell. (US 5,541,478).

Regarding claims 1, 21, and 38, Troxell discloses (see figures 5 and 8) a flat panel display including a first surface containing an anode, column (50) and row (48) electrodes, a plurality of conductive areas (78), a phosphor layer (76) formed at the conductive area, a TFT circuit, and a cold cathode (42). (Column 5 lines 13-27). Troxell further discloses the use of a

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two-transistor circuit and inherent line capacitance between the outputs of the transistors. (See incorporated references). Further, Troxell discloses the alternative use of various cold cathodes including, filaments, field emission arrays, and Spindt cathodes. Field emission arrays inherently include an emitter layer on a conductive layer formed on an opposite substrate. (Column 1 lines 44-53).

Regarding claim 17, 18, and 23, the first and second substrates are separated by insulating spacers of glass sidewalls further the device is operated in a vacuum. (See abstract).

Regarding claims 2, and 34, Troxell further discloses the use of a grid (64) formed between the anode and cathode. The grid is kept at a potential between the anode and cathode potentials. (Column 5 lines 40-46).

Regarding claims 6, 7, 25, 28, and 29, Troxell alternatively discloses the use of a wire mesh grid (or second conductive layer isolated from the emitter material). The wire mesh grid is located between the filament and anode and is operated at a potential between the two. Further, the first grid disclosed above, is located between the wire mesh grid and the anode and is kept at a potential between the two.

Regarding claims 8 and 35, Troxell alternatively discloses the use of either a silicon substrate or glass substrate for the first surface. (Column 6 lines 30-35).

Regarding claims 10, 15, 36, and 37, the device as discloses emits light through the top cathode surface of the flat panel display device when the bottom surface is opaque.

Regarding claims 12 and 31, the use of a filament cathode implies the distribution of emitter materials throughout the cathode and electrons are necessarily emitted from an edge of the emitter material.

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Regarding claims 19 and 20, the phosphors emit light in the red, green, and blue ranges. (See figure 1).

Regarding claim 22, the first and second inputs of both devices are connected to row and column lines respectively. Further the predetermined voltage is passed from one of the inputs for both the first and second device and passed to the conductive area. (See incorporated reference).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims are rejected under 35 U.S.C. 103(a) as being obvious over Troxell (US 5,541,478).

Regarding claims 16 and 30, Troxell discloses the device as claimed (see rejections of claims 1 and 23 above) but does not appear to specify the specific voltage used for the conductive areas. However Troxell does disclose the use of a low voltage anode over the use of a high voltage device. Further the specific voltage passed to the conductive areas would necessarily be adjusted according to the emitter material, location from the emitter, and dimensions of the pixel elements. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Thus It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide voltages inside the claimed range for a specific

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embodiment, since optimization of workable ranges is considered within the skill of the art and the claimed ranges are consistent with the overall use of the device as disclosed.

Claims 1, 2, 6-10, 12, 15, 17-23, 25, 28, 29, 31, 34, and 36-38 are rejected under 35 U.S.C. 102(b) as anticipated by Troxell (US 5,541,478) or, in the alternative, under 35 U.S.C. 103(a) as obvious over Troxell (US 5,541,478) in view of Troxell. (US 5,177,406).

Regarding claims 1, Troxell ('478) discloses the device as claimed (see rejection of claim 1 above) but does not appear to specify the use of a capacitively held TFT. However Troxell ('406), in the same field of endeavor, discloses (see figures 3 and 4) the use of an active matrix anode substrate including a capacitively held TFT. The first device (30) includes a first and second input on row and column lines (26 and 28), while the second device is connected to the output of the first device and a capacitor (32) that holds the second device in an open state for a predetermined period of time. The second device passes a predetermined voltage to the conductive area. The use of a capacitively held TFT advantageously increases device brightness while allowing for lower control voltages. (Column 2 lines 5-25). Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate a capacitively held TFT as taught by Troxell ('406) into the device as disclosed by Troxell ('478) in order to advantageously increase device brightness while allowing for lower control voltages.

Claims 2, 6-8, 10, 12, 15, 17-23, 25, 28, 29, 31, 34, and 36-38 are rejected for the reasons cited in the rejection under Troxell (US 5,541,478).

Regarding claim 9, Troxell ('478) in view of Troxell ('406) discloses the device as claimed but does not appear to specify the use of transparent conductive areas. However Troxell ('406) discloses the use of conductive areas that are mixtures of phosphor material and ITO. (Column 10 lines 13-20). The use of a phosphor and conductive material for the conductive areas advantageously simplifies manufacture by reducing the number of layers. Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the use of transparent conductive areas as taught by Troxell ('406) into the device as disclosed by Troxell ('478) in view of Troxell ('406) in order to advantageously simplify manufacture by reducing the number of layers.

Claims 1-9, 11, 13, 14, 17-29, 32-35, and 38 are rejected under 35 U.S.C. 103(a) as being obvious over Oh (US 2004/0222734) in view of Troxell (US 5,177,406).

Regarding claim 1-3, 5, 17, 18, 21-23, 25-27, 34, and 38, Oh discloses (see figure 6) a flat panel device including a first surface with an anode and phosphor layer, a second surface (2) including a conductive layer (10), emitter material (12), a second conductive layer (6) formed over the first conductive layer and electrically isolated from the first layer, and a grid electrode formed between second conductive layer and the anode. (Paragraph 0053). The voltages of the layers increase from the direction of the cathode to the anode, further the potential difference between the cathode and the gate electrodes is above the threshold voltage of the emitter, while the voltage of the grid electrode is less than the threshold electrode. (Paragraph 0045). Oh further discloses the use of insulating spaces and an evacuated space for the display device. (Paragraphs 0013 and 0020). Oh does not appear to specify the use of thin film transistors on the

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anode surface, however Troxell ('406), in the same field of endeavor, discloses (see figures 3 and 4) the use of an active matrix anode substrate including a capacitively held TFT. The first device (30) includes a first and second input on row and column lines (26 and 28), while the second device is connected to the output of the first device and a capacitor (32) that holds the second device in an open state for a predetermined period of time. The second device passes a predetermined voltage to the conductive area. The use of a capacitively held TFT advantageously increases device brightness while allowing for lower control voltages. (Column 2 lines 5-25). Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate a capacitively held TFT as taught by Troxell ('406) into the device as disclosed by Oh in order to advantageously increase device brightness while allowing for lower control voltages.

Regarding claims 4, 6, 7, 24, 28, and 29, the second conductive layer can alternatively be considered the first grid and the grid disclosed above can be considered the second grid.

Regarding claims 8, 9, and 35, the first surface and the electrodes on the first surface are optically transparent.

Regarding claims 13, 14, 32, and 33, Oh further discloses the use of nanotubes and alpha carbon for the emitter material. (Paragraph 0019).

Regarding claims 19 and 20, Oh further discloses the use of red, green, and blue phosphors on the anode substrate. (Paragraph 0033)

Regarding claim 11, Oh in view of Troxell ('406) discloses the claimed invention but does not appear to specify the composition of the second substrate. However, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its

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suitability for the intended use as a matter of obvious design choice. Here the use of silicon for the opaque substrate would have been an obvious selection. Silicon wafers are well known in the art of display devices and advantageously allow for ease of manufacture including ease of layering through photolithography. Thus, it would have been obvious to one having ordinary skills in the art at the time the invention was made to have used a silicon substrate as the second surface, since the selection of known materials for a known purpose is within the skill of the art.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kinoshita et al. (US 5,736,814) disclose the use of an addressable anode substrate in a vacuum fluorescent display device.

Contact Information


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matt P Hodges whose telephone number is (571) 272-2454. The examiner can normally be reached on 7:30 AM to 4:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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